

MR1683-291

Serial Number: 09/766,623

Reply to Final Office Action dated 21 April 2004

REMARKS/ARGUMENTS

This case has been carefully reviewed and analyzed in view of the final Official Action dated 21 April 2004. Responsive to the rejections made in the Official Action, Claims 6, 8 and 12 have been amended to clarify the combination of elements that form the invention of the subject Patent Application. Claims 1-5, 7 and 9-11 are cancelled.

In the Official Action, the Examiner rejected Claims 6-12 under 35 U.S.C. § 102(e), as being anticipated by Tsuchiya, U.S. Patent 6,359,740. The Examiner stated that the reference disclosed an image pick-up module that included a circuit main board, an image sensor coupled to the circuit board and having a peripheral portion, and a lens-seat disposed on the image sensor. The Examiner further stated that the lens seat included a connection section and pick-up cylinder section extending therefrom. The Examiner stated that the connecting section engaged the peripheral portion of the image sensor housing package to be guided thereby into an aligned position so that the lens would have an axis aligned in a predetermined manner relative to the coupling transistor of the sensor.

Before discussing the reference relied upon by the Examiner, it is believed beneficial to first briefly review the structure of the invention of the subject Patent Application, as now claimed. The invention of the subject Patent Application is directed to an image pick-up module that includes a circuit main board and an image sensor coupled to the circuit main board. The image sensor includes a

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coupling transistor device disposed within a housing package of the image sensor having a peripheral side edge circumscribing the housing package. The module further includes a lens seat disposed on the image sensor and spaced from the circuit main board. The lens seat includes a connecting section and an image pick-up cylinder section extending therefrom. The connecting section engages the peripheral side edge of the image sensor housing to thereby be located in an aligned position. The module includes a lens coupled to the image pick-up cylinder section of the lens seat. The lens has an axis aligned with the coupling transistor device when the connecting section of the lens seat is disposed in the aligned position.

In the invention of the subject Patent Application, as now defined in Claim 8, the image pick-up module includes a circuit main board and an image sensor coupled to the circuit main board. The image sensor includes a coupling transistor device disposed within a housing package of the image sensor. The housing package has a length and a width dimension defined between opposing peripheral sides thereof. The module includes a lens seat disposed on the image sensor and is spaced from the circuit main board. The lens seat includes (a) a connecting section having a length and a width dimension defined between opposing peripheral sides thereof, and (b) an image pick-up cylinder section extending from the connecting section. The length and width dimensions of the connecting section are respectively equal to the length and width dimensions of the housing

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package of the image sensor. The connecting section is disposed in contiguous contact with a peripheral edge portion of an upper surface of the housing package and has the peripheral sides thereof aligned with the peripheral sides of the housing package to thereby locate the lens seat in an aligned position. The connecting section has formed thereon first and second end faces defining an inner flange portion to retentatively engage the peripheral portion of the image sensor housing package. The module further includes a lens coupled to the image pick-up cylinder section of the lens seat. The lens has an axis aligned with the coupling transistor device when the lens seat is disposed in the aligned position. By the arrangement defined in Claims 6 and 8, the lens is aligned with the coupling transistor of the sensor irrespective of the position of the sensor on the circuit main board. Thus, by the coupling of the lens seat directly to the housing package of the image sensor, the module is suitable for automated assembly as there are less alignment considerations to be accounted for than required in prior art structures.

In contradistinction, the image capturing device of Tsuchiya provides a lens retainer 30 that is aligned with the glass frame 20 by means of a plurality of protrusions 301 that are respectively received within recesses 202 of the glass frame 20. Glass frame 20 is provided with pins 201 that are received in corresponding openings 101a in the circuit board 10 to provide alignment with the circuit board 10. Thus, to provide alignment between the lens retainer 30 and the

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optical sensor package 50, the location of the optical sensor 50 on the circuit board 10 is critical, yet no structures are provided for that purpose.

Whereas in the invention of the subject Patent Application the mounting of the sensor package housing is not critical to the alignment of the lens seat with the image sensor, as the structure of the lens seat provides direct coupling to the housing package of the image sensor and thereby assures alignment therewith. Contrary to the Examiner's assertion, the glass frame 20 is a separate and distinct element from the housing package of the optical sensor 50 and they must be separately positioned on the circuit board. As previously stated, the glass frame 20 includes pins 201 to aid in the glass frame's location on the circuit board, while there are no provisions for locating the housing of sensor 50 on the circuit board with relation to the glass frame 20. Therefore, the referenced structure is subject to the same problems as the prior art shown in FIG. 7 of the subject Patent Application, problems solved by the instant invention.

Thus, the reference fails to disclose or suggest a lens seat having a connecting section engaging the peripheral side edge of the image sensor housing to thereby be located in an aligned position, as defined in Claim 1. Further, the reference fails to disclose or suggest a lens seat with a length and a width dimension equal to corresponding length and width dimensions of the image sensor housing package, the connecting section is disposed in contiguous contact with a peripheral edge portion of an upper surface of the housing package and has

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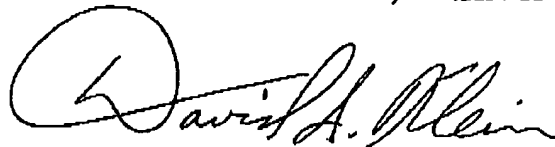
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the peripheral sides thereof aligned with the peripheral sides of the housing package to thereby locate the lens seat in an aligned position, the connecting section having formed thereon first and second end faces defining an inner flange portion to retentatively engage a peripheral portion of the image sensor housing package, as now defined in Claim 8. Claim 12 further defines the sealing glass sheet as overlaying at least a portion of the upper surface of the image sensor housing package and being in contiguous contact therewith. As the reference fails to disclose each and every one of the elements of the invention of the subject Patent Application, as now defined in Claim 6, 8 and 12, it cannot anticipate that invention. Further, as the reference fails to suggest the combination of elements which form the invention of the subject Patent Application, it cannot make obvious that invention either.

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For all of the foregoing reasons, it is now believed that the subject Patent Application has been placed in condition for allowance, and such action is respectfully requested.

Respectfully submitted,
For: ROSENBERG, KLEIN & LEE



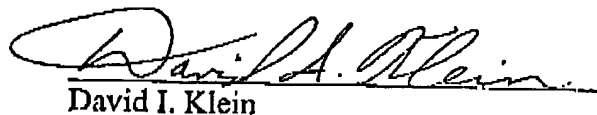
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David I. Klein

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